BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : 12. Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.

BYATARAYANAPURA DIVISION

TEST REPORT

1st & Part bill

TEJUS
CONSULTANTS

PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Sri. M. S. Venkatesh
Consultant	:	TEJUS CONSULTANTS
Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	21/05/2018
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20} - 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.382	2431.89	1.60	0.960	37.80	19.25	20.79	19.96	24.95
2	50.00	80.00	0.386	2457.35	1.60	0.960	37.60	19.15	20.68	19.85	24.82
3	50.00	80.00	0.380	2419.16	1.60	0.960	38.10	19.40	20.96	20.12	25.15

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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Sri. M. S. Venkatesh
Consultant	:	TEJUS CONSULTANTS
Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	21/05/2018
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20} . 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.382	2431.89	1.60	0.960	38.12	19.41	20.97	20.13	25.16
2	50.00	80.00	0.386	2457.35	1.60	0.960	38.30	19.51	21.07	20.22	25.28
3	50.00	80.00	0.380	2419.16	1.60	0.960	38.60	19.66	21.23	20.38	25.48

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Consultant's Representative

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Sri. M. S. Venkatesh
Consultant	:	TEJUS CONSULTANTS
Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	21/05/2018
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}, 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.392	2495.55	1.60	0.960	37.82	19.26	20.80	19.97	24.96
2	50.00	80.00	0.388	2470.08	1.60	0.960	37.90	19.30	20.85	20.01	25.02
3	50.00	80.00	0.382	2431.89	1.60	0.960	38.20	19.46	21.01	20.17	25.21

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Sri. M. S. Venkatesh
Consultant	:	TEJUS CONSULTANTS
Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	21/05/2018
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20} 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.386	2457.35	1.60	0.960	38.20	19.46	21.01	20.17	25.21
2	50.00	80.00	0.388	2470.08	1.60	0.960	38.50	19.61	21.18	20.33	25.41
3	50.00	80.00	0.390	2482.82	1.60	0.960	38.62	19.67	21.24	20.39	25.49

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Test Report on Cement

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Sri. M. S. Venkatesh
Sample ID	Cement
Date of Sample Tested	30/05/2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	37	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	366 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	7.000	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri. M. S. Venkatesh
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size			Proposed Use	PCC for Drain
Sample Location	At Site/Plant			Date of Sampling	30/05/2018
				Date of Testing	30/05/2018
IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	105	105	3.50	96.50	95-100
20.00mm	1530	1635	54.50	45.50	30-70
10.00mm	796	2431	81.03	18.97	10-35
4.75mm	455	2886	96.20	3.80	0-5
Pan	114	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri. M. S. Venkatesh

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	Proposed Use	coping concrete
Location/Source	At Site/Plant	Date of Sampling	30/05/2018
Period of Soaking	24 hours	Date of Testing	30/05/2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	Average
A	Weight of sturated surface dry sample gm.	645	655	632	
B	Weight of oven - dry sample gm.	632	648	622	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1680	1691	1673	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.633	2.711	2.658	2.668
G	Absorption (%) $\frac{(A-B)*100}{B}$	2.057	1.080	1.608	1.582

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	Sri. M. S. Venkatesh

SIEVE ANALYSIS

Total Weight:	3000 gms				
Type of Material	Fine aggregate (River Sand/ M sand)		Proposed Use	Drain	
Sample Location	At Site/Plant		Date of Sampling	30/05/2018	
			Date of Testing	30/05/2018	
IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	245	245	8.17	91.83	90 - 100
2.36 mm	349	594	19.80	80.20	75 - 100
1.18 mm	402	996	33.20	66.80	55 - 90
0.600 mm	398	1394	46.47	53.53	35 -59
0.300 mm	735	2129	70.97	29.03	8-30
0.150 mm	746	2875	95.83	4.17	0 - 10
Pan	125	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC/MSV/QC/2018-19 Date: 31.05.2018

TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Client : **Bruhat Bangalore Mahanagar Palike**
Agency : **Sri.M.S. Venkatesh, Contractor, Bangalore.**
Name of Work : 12. Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Sample Identification : 8mm TMT Bars
Technical Reference : IS 1786:2008, IS 1608:2005, IS 1599:1985 (Reaffirmed 2006)
Date of test: : 31.05.2018

Sl.No	Nominal size (dia in mm)	Mass per metre (kg/metre)	TENSILE STRENGTH		
			0.20 % proof stress/ yield stress ($N/mm^{2)}$	Tensile strength ($N/mm^{2)}$	Elongation, percent on gauge length
1	8	0.399	523	559	17

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For Civil Experts
Authorised Signature

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174, Sri Ranga Complex, Amrutha Nagar Main Road, New Bank Colony, Konanakunte, Bangalore - 560 062.
Mobile : +91 97429 59595 | Tel/Fax : 080 2632 2565 | Email : civilexpertsltd@gmail.com | URL : www.civilexperts.co.in

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Sri. M. S. Venkatesh		
Proposed Use	WMM	**Date of Sampling**	**23/06/2018**
Sample Location	At plant	**Date of Testing**	**23/06/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	379.00	371.00	370.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	319.00	273.00	290.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	60.00	98.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	15.83	26.42	21.62	
5	Average Aggregate impact value	(%)	21.29			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Authorised Signatory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	23/06/2018
		Date of Testing	23/06/2018

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	900	78	899	79
16.0	12.5	1023	99	1011	114
12.5	10.0	480	85	411	56
10.0	6.3	525	75	465	32
Total		**2928**	**337**	**2786**	**281**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.51
Elongation Index(%):	10.09
Combined FI+EL (%)	21.60

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	23/06/2018
		Date of Testing	23/06/2018

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	899	69	863	89
16.0	12.5	1190	112	1123	99
12.5	10.0	550	85	452	69
10.0	6.3	592	82	525	56
Total		3231	348	2963	313

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.77
Elongation Index(%):	10.56
Combined FI+EL (%)	21.33

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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TEJUS
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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	23/06/2018
		Date of Testing	23/06/2018

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	886	72	822	91
16.0	12.5	1223	112	1135	112
12.5	10.0	481	89	278	49
10.0	6.3	486	76	390	49
Total		**3076**	**349**	**2625**	**301**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.35
Elongation Index(%):	11.47
Combined FI+EL (%)	22.81

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	23/06/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	23/06/2018
Type of material & Purpose:	WMM	**Date of testing:**	23/06/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	345	325	3.25	96.75	95-100
22.4	2395	2727	27.27	72.73	60-80
11.2	1770	4525	45.25	54.75	40-60
4.75	1685	6255	62.55	37.45	25-40
2.36	1156	7321	73.21	26.79	15-30
0.6	1289	8623	86.23	13.77	8.0-22.0
0.075	945	9653	96.53	3.47	0 8
Pan	347				
Total	10000				

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	23/06/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	23/06/2018
Type of material & Purpose:	WMM	**Date of testing:**	23/06/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	312	312	3.12	96.88	95-100
22.4	2246	2558	25.58	74.42	60-80
11.2	1725	4283	42.83	57.17	40-60
4.75	1899	6182	61.82	38.18	25-40
2.36	1321	7503	75.03	24.97	15-30
0.6	1212	8715	87.15	12.85	8.0-22.0
0.075	921	9636	96.36	3.64	0-8
Pan	364				
Total	10000				

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	23/06/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	23/06/2018
Type of material & Purpose:	WMM	**Date of testing:**	23/06/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	396	396	3.96	96.04	95-100
22.4	2231	2627	26.27	73.73	60-80
11.2	1725	4352	43.52	56.48	40-60
4.75	1996	6348	63.48	36.52	25-40
2.36	1321	7669	76.69	23.31	15-30
0.6	1345	9014	90.14	9.86	8.0-22.0
0.075	656	9670	96.70	3.30	0-8
Pan	330				
Total	10000				

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TEJUS
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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.	
Consultants	TEJUS CONSULTANTS	
Contractor	Sri. M. S. Venkatesh	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size		Proposed Use	Drain -	
Sample Location	At Site/Plant		Date of Sampling	25/06/2018	
			Date of Testing	25/06/2018	
IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	595	595	5.95	94.05	90-100
10.0	3124	3719	37.19	62.81	40-85
4.75	6109	9828	98.28	1.72	0-10
Pan	172	10000			

Remarks :	Satisfactory / Not Satisfactory

Consultant's Representative

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	Sri. M. S. Venkatesh				
Total Weight:	10000	gms			

SIEVE ANALYSIS

Type of Material	20 mm down size		Proposed Use	Drain	
Sample Location	Plant/ At site		Date of Sampling	25/06/2018	
			Date of Testing	25/06/2018	
IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	265	265	2.65	97.35	95 - 100
10.00 mm	4730	4995	49.95	50.05	25 - 55
4.75 mm	4595	9590	95.90	4.10	0 - 10
Pan	410	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

Consultant's Representative

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	**M/s Tejus Consultants**
Contractor	**Sri. M. S. Venkatesh**

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	25/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6249	6440	6240
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9660	9669	9700
Wt. of sand in cone (w3) gms.	830	832	810
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3510	3630	3548
Bulk density of sand (γs)gm/cc	1.32	1.32	1.33
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.34	2.34
Moisture meter reading(moisture content)	12.30	12.30	12.30
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.09	2.09	2.08
MDD	2.12	2.12	2.12
OMC	12.60%	12.60%	12.60%
% of Compaction Obtained	98.71	98.36	98.25
Compaction Required	98%	98%	98%

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	**Sri. M. S. Venkatesh**

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	25/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6225	6445	6554
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9688	9550	9521
Wt. of sand in cone (w3) gms.	835	810	820
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3477	3640	3659
Bulk density of sand (γs)gm/cc	1.31	1.32	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.34	2.35
Moisture meter reading(moisture content)	12.31	12.30	12.30
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.09	2.08	2.09
MDD	2.12	2.12	2.12
OMC	12.60%	12.60%	12.60%
% of Compaction Obtained	98.50	98.17	98.56
Compaction Required	98%	98%	98%

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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079 Ph: 80 2328 5422, tejusconsultants@gmail.com

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division..
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	25/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6446	6221	6445
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9542	9679	9538
Wt. of sand in cone (w3) gms.	832	810	836
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3626	3511	3626
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.35	2.34	2.35
Moisture meter reading(moisture content)	12.32	12.30	12.30
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.09	2.08	2.09
MDD	2.12	2.12	2.12
OMC	12.60%	12.60%	12.60%
% of Compaction Obtained	98.55	98.24	98.55
Compaction Required	98%	98%	98%

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	25/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	**1**	**2**	**3**
Wt. of wet material from hole (Ww) gms.	6631	6628	6675
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9412	9433	9421
Wt. of sand in cone (w3) gms.	835	820	832
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3753	3747	3747
Bulk density of sand (ys)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.33	2.33	2.35
Moisture meter reading(moisture content)	12.10	12.10	12.10
Result			
FDD(Wt.of the dry material)=(100yb/100+mc)gm/cc	2.08	2.08	2.10
MDD	2.12	2.12	2.12
OMC	12.60%	12.60%	12.60%
% of Compaction Obtained	98.14	98.25	98.95
Compaction Required	98%	98%	98%

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	25/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6579	6868	6352
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9456	9289	9599
Wt. of sand in cone (w3) gms.	830	832	835
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3714	3879	3566
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.34	2.34	2.35
Moisture meter reading(moisture content)	12.30	12.30	12.30
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.08	2.08	2.09
MDD	2.12	2.12	2.12
OMC	12.60%	12.60%	12.60%
% of Compaction Obtained	98.21	98.17	98.76
Compaction Required	98%	98%	98%

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TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	Sri. M. S. Venkatesh	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	Proposed Use	Drain	
Sample Location	Plant/ At site	Date of Sampling	25/06/2018	
		Date of Testing	25/06/2018	

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	265	265	2.65	97.35	95 - 100
10.00 mm	4730	4995	49.95	50.05	25 - 55
4.75 mm	4595	9590	95.90	4.10	0 - 10
Pan	410	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

Consultant's Representative

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri. M. S. Venkatesh

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	Proposed Use	coping concrete
Location/Source	At Site/Plant	Date of Sampling	25/06/2018
Period of Soaking	24 hours	Date of Testing	25/06/2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	Average
A	Weight of sturated surface dry sample gm.	648	660	675	
B	Weight of oven - dry sample gm.	638	650	662	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1685	1692	1698	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.681	2.675	2.627	2.661
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.567	1.538	1.964	1.690

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	Sri. M. S. Venkatesh

SIEVE ANALYSIS

Total Weight:	3000 gms				
Type of Material	Fine aggregate (River Sand/ M sand)		Proposed Use	Drain	
Sample Location	At Site/Plant		Date of Sampling	25/06/2018	
			Date of Testing	25/06/2018	
IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	248	248	8.27	91.73	90 - 100
2.36 mm	345	593	19.77	80.23	75 - 100
1.18 mm	412	1005	33.50	66.50	55 - 90
0.600 mm	406	1411	47.03	52.97	35 -59
0.300 mm	755	2166	72.20	27.80	8-30
0.150 mm	758	2924	97.47	2.53	0 - 10
Pan	76	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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Test Report on Cement

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Sri. M. S. Venkatesh
Sample ID	Cement
Date of Sample Tested	25/06/2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	38	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	336 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	5.000	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	

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TEJUS
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Test report on Compressive strength of concrete cubes

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Sri. M. S. Venkatesh
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	25/06/2018	02/07/18	7 days	8.190	22500	298	13.24	13.47
2	25/06/2018	02/07/18	7 days	8.195	22500	306	13.60	
3	25/06/2018	02/07/18	7 days	8.201	22500	305	13.56	

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Test report on Compressive strength of concrete cubes

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Sri. M. S. Venkatesh
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	25/06/2018	23/07/2018	28 days	8.245	22500	450	20.00	20.13
2	25/06/2018	23/07/2018	28 days	8.265	22500	452	20.09	
3	25/06/2018	23/07/2018	28 days	8.272	22500	457	20.31	

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PRECAST SLAB (CORE) TEST REPORT		
Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Sri. M. S. Venkatesh
Name of Work	:	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	26/6/2018
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}. 250mm Thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	100.00	180.00	3.465	2450.99	1.80	0.960	160.00	20.37	22.00	21.12	26.40
2	100.00	180.00	3.505	2479.28	1.80	0.960	160.10	20.38	22.02	21.13	26.42
3	100.00	180.00	3.515	2486.35	1.80	0.960	159.40	20.30	21.92	21.04	26.30

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported reported within 15 days from the date of testing.

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ಬೃ.ಬೆ.ಮ.ಪಾ.

TEJUS CONSULTANTS
No 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079. O: +91-80-23207500 Email: tejusconsultants@gmail.com

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

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Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Sri. M. S. Venkatesh		
Proposed Use	BC	Date of Sampling	11/07/2018
Sample Location	At plant	Date of Testing	11/07/2018

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	363.00	346.00	360.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	282.00	278.00	282.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	81.00	68.00	78.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.31	19.65	21.67	
5	Average Aggregate impact value	(%)	21.21			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	**Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.**
Client :	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant :	**M/s Tejus Consultants**
Contractor:	**Sri. M. S. Venkatesh**

Type of Material	**BC**	**Proposed Use**	**BC**
Sample Location	**At plant**	**Date of Sampling**	**11/07/2018**
		Date of Testing	**11/07/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	642	82	562	62
16.0	12.5	1282	109	1129	75
12.5	10.0	625	72	565	112
10.0	6.3	625	63	560	69
Total		**3174**	**326**	**2816**	**318**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.27
Elongation Index(%):	11.29
Combined FI+EL (%)	21.56

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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	11/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	11/07/2018
Type of material & Purpose:	BC	Date of testing:	11/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	80	80.0	6.67	93.33	90 - 100
9.50	115	195.0	16.25	83.75	70 - 88
4.75	210	405.0	33.75	66.25	53 - 71
2.360	170	575.0	47.92	52.08	42 - 58
1.180	145	720.0	60.00	40.00	34 - 48
0.600	120	840.0	70.00	30.00	26 - 38
0.300	118	958.0	79.83	20.17	18 - 28
0.150	82	1040.0	86.67	13.33	12 - 20
0.075	102	1142.0	95.17	4.83	4 - 10
Pan	58.0				
Total	1200.0				

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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	11/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	11/07/2018
Type of material & Purpose:	BC	Date of testing:	11/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	85	85.0	7.08	92.92	90 - 100
9.50	121	206.0	17.17	82.83	70 - 88
4.75	212	418.0	34.83	65.17	53 - 71
2.360	182	600.0	50.00	50.00	42 - 58
1.180	131	731.0	60.92	39.08	34 - 48
0.600	119	850.0	70.83	29.17	26 - 38
0.300	112	962.0	80.17	19.83	18 - 28
0.150	66	1028.0	85.67	14.33	12 - 20
0.075	99	1127.0	93.92	6.08	4 - 10
Pan	73.0				
Total	1200.0				

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TEJUS CONSULTANTS
No 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079 sultants@gmail.com

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	13/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT		
Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	974	978
2. Weight of Mixture after extraction, g	922	926
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.00	5.00
6. Weight of fines, g	1.00	1.00
7. Weight of Bitumen & fines	53.00	53.00
8. Bitumen content in %	5.44	5.42
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION (As per MORT&H 500-17,Grading-2)			
Sample Location:	At site	Date of Sampling:	13/07/2018
Type of material & Purpose:	BC	Date of testing:	13/07/2018
		Oven Dry Wt.(gms):	922.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	66	66.0	7.16	92.84	90 - 100
9.50	125	191.0	20.72	79.28	70 - 88
4.75	147	338.0	36.66	63.34	53 - 71
2.360	140	478.0	51.84	48.16	42 - 58
1.180	90	568.0	61.61	38.39	34 - 48
0.600	62	630.0	68.33	31.67	26 - 38
0.300	77	707.0	76.68	23.32	18 - 28
0.150	69	776.0	84.16	15.84	12 - 20
0.075	95	871.0	94.47	5.53	4 - 10
Pan	51.0				
Total	922.0				

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TEJUS
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	13/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.870	0.860	0.833
Final weight of plate after application of tack Coat (c)	Kg	0.896	0.880	0.855
Weight of tack Coat (d=c-b)	Kg	0.026	0.020	0.022
Rate of spread of tack coat	Kg/sq.m	0.289	0.222	0.244
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

Authorised Signatory

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರ
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri. M. S. Venkatesh
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	Proposed Use	PCC for Road
Sample Location	At Site/Plant	Date of Sampling	26/07/2018
		Date of Testing	26/07/2018

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	105	105	3.50	96.50	95-100
20.00mm	1530	1635	54.50	45.50	30-70
10.00mm	796	2431	81.03	18.97	10-35
4.75mm	455	2886	96.20	3.80	0-5
Pan	114	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

Consultant's Representative

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TEJUS
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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri. M. S. Venkatesh

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	Proposed Use	coping concrete
Location/Source	At Site/Plant	Date of Sampling	26/07/2018
Period of Soaking	24 hours	Date of Testing	26/07/2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	Average
A	Weight of sturated surface dry sample gm.	646	656	634	
B	247	634	649	621	
C	351	1275	1275	1275	
D	404	1680	1691	1673	
E	$\frac{399}{736}$ $\frac{}{(C+A-D)}$	2.631	2.704	2.631	2.655
G	748 $\frac{(A-B)*100}{B}$	1.893	1.079	2.093	1.688

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	Sri. M. S. Venkatesh

SIEVE ANALYSIS

Total Weight:	3000 gms				
Type of Material	Fine aggregate (River Sand/ M sand)		Proposed Use	Drain	
Sample Location	At Site/Plant		Date of Sampling	26/07/2018	
			Date of Testing	26/07/2018	
IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	247	247	8.23	91.77	90 - 100
2.36 mm	351	598	19.93	80.07	75 - 100
1.18 mm	404	1002	33.40	66.60	55 - 90
0.600 mm	399	1401	46.70	53.30	35 -59
0.300 mm	736	2137	71.23	28.77	8-30
0.150 mm	748	2885	96.17	3.83	0 - 10
Pan	115	3000			-

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

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TEJUS
CONSULTANTS

Test Report on Cement

Project	Improvements to Roads and Drains at Thanisandra Village and surrounding areas in ward No 06 - Thanisandra, Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Sri. M. S. Venkatesh
Sample ID	Cement
Date of Sample Tested	26/07/2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	38	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	364Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	7.000	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	

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BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : 13. Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.

BYATARAYANAPURA DIVISION

TEST REPORT

1st & Part bill

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Sri. M. S. Venkatesh		
Proposed Use	WMM	**Date of Sampling**	21/06/2018
Sample Location	At plant	**Date of Testing**	21/06/2018

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	380.00	372.00	371.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	296.00	272.00	292.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	84.00	100.00	79.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	22.11	26.88	21.29	
5	Average Aggregate impact value	(%)	23.43			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Authorised Signatory

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TEJUS
CONSULTANTS

GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	21/06/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	21/06/2018
Type of material & Purpose:	WMM	**Date of testing:**	21/06/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	355	325	3.25	96.75	95-100
22.4	2396	2727	27.27	72.73	60-80
11.2	1772	4525	45.25	54.75	40-60
4.75	1684	6255	62.55	37.45	25-40
2.36	1159	7321	73.21	26.79	15-30
0.6	1290	8623	86.23	13.77	8.0-22.0
0.075	948	9653	96.53	3.47	0-8
Pan	347				
Total	10000				

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	21/06/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	21/06/2018
Type of material & Purpose:	WMM	**Date of testing:**	21/06/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	333	333	3.33	96.67	95-100
22.4	2249	2582	25.82	74.18	60-80
11.2	1736	4318	43.18	56.82	40-60
4.75	1900	6218	62.18	37.82	25-40
2.36	1325	7543	75.43	24.57	15-30
0.6	1216	8759	87.59	12.41	8.0-22.0
0.075	922	9681	96.81	3.19	0-8
Pan	319				
Total	10000				

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-24

TEJUS
CONSULTANTS

Project	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	22/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	**1**	**2**	**3**
Wt. of wet material from hole (Ww) gms.	6320	6520	6605
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9692	9562	9532
Wt. of sand in cone (w3) gms.	835	810	820
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3473	3628	3648
Bulk density of sand (γs)gm/cc	1.31	1.32	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.38	2.37	2.37
Moisture meter reading(moisture content)	12.40	12.40	12.40
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.12	2.11	2.11
MDD	2.15	2.15	2.15
OMC	12.70%	12.70%	12.70%
% of Compaction Obtained	98.65	98.16	98.15
Compaction Required	98%	98%	98%

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CONSULTANTS

Project	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	22/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6620	6400	6580
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9520	9680	9540
Wt. of sand in cone (w3) gms.	832	810	836
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3648	3510	3624
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.40	2.41	2.40
Moisture meter reading(moisture content)	12.45	12.45	12.45
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.13	2.14	2.13
MDD	2.17	2.17	2.17
OMC	12.55%	12.55%	12.55%
% of Compaction Obtained	98.17	98.63	98.22
Compaction Required	98%	98%	98%

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CONSULTANTS

Project	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	22/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	**1**	**2**	**3**
Wt. of wet material from hole (Ww) gms.	6825	6815	6780
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9415	9456	9452
Wt. of sand in cone (w3) gms.	835	820	832
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3750	3724	3716
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.40	2.42	2.41
Moisture meter reading(moisture content)	12.49	12.49	12.49
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.14	2.15	2.14
MDD	2.17	2.17	2.17
OMC	12.53%	12.53%	12.53%
% of Compaction Obtained	98.42	98.96	98.66
Compaction Required	98%	98%	98%

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Project	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	22/06/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	**1**	**2**	**3**
Wt. of wet material from hole (Ww) gms.	6680	6825	6615
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9526	9456	9556
Wt. of sand in cone (w3) gms.	834	832	835
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3655	3712	3609
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.41	2.43	2.42
Moisture meter reading(moisture content)	12.62	12.62	12.62
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.14	2.16	2.15
MDD	2.18	2.18	2.18
OMC	12.80%	12.80%	12.80%
% of Compaction Obtained	98.26	98.85	98.55
Compaction Required	98%	98%	98%

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	**Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**		
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**		
Consultant	**M/s Tejus Consultants**		
Contractor	**Sri. M. S. Venkatesh**		
Proposed Use	BC	**Date of Sampling**	**01/07/2018**
Sample Location	At plant	**Date of Testing**	**01/07/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	367.00	358.00	364.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	289.00	284.00	289.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	78.00	74.00	75.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.25	20.67	20.60	
5	Average Aggregate impact value	(%)	20.84			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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ಸಹಾಯಕ ಅಭಿಯಂತರರು
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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-24

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	**Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client :	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant :	**M/s Tejus Consultants**
Contractor:	**Sri. M. S. Venkatesh**

Type of Material	**BC**	**Proposed Use**	**BC**
Sample Location	**At plant**	**Date of Sampling**	**01/07/2018**
		Date of Testing	**01/07/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	650	87	670	65
16.0	12.5	1286	112	1145	82
12.5	10.0	633	78	580	119
10.0	6.3	642	69	585	73
Total		**3211**	**346**	**2980**	**339**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.78
Elongation Index(%):	11.38
Combined FI+EL (%)	22.15

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	01/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	01/07/2018
Type of material & Purpose:	BC	Date of testing:	01/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	87	87.0	7.25	92.75	90 - 100
9.50	117	204.0	17.00	83.00	70 - 88
4.75	216	420.0	35.00	65.00	53 - 71
2.360	174	594.0	49.50	50.50	42 - 58
1.180	148	742.0	61.83	38.17	34 - 48
0.600	129	871.0	72.58	27.42	26 - 38
0.300	111	982.0	81.83	18.17	18 - 28
0.150	71	1053.0	87.75	12.25	12 - 20
0.075	76	1129.0	94.08	5.92	4 - 10
Pan	71.0				
Total	1200.0				

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TEJUS CONSULTANTS
No 58, 3rd main, 6th Cross, 1st Stage KHB Colony Basaveshwaranagar Bangalore - 56[illegible] +91 80 2328[illegible] tejusconsultants@gmail.com

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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	01/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	01/07/2018
Type of material & Purpose:	BC	Date of testing:	01/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	94	94.0	7.83	92.17	90 - 100
9.50	130	224.0	18.67	81.33	70 - 88
4.75	215	439.0	36.58	63.42	53 - 71
2.360	184	623.0	51.92	48.08	42 - 58
1.180	139	762.0	63.50	36.50	34 - 48
0.600	121	883.0	73.58	26.42	26 - 38
0.300	100	983.0	81.92	18.08	18 - 28
0.150	68	1051.0	87.58	12.42	12 - 20
0.075	85	1136.0	94.67	5.33	4 - 10
Pan	64.0				
Total	1200.0				

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ಸಹಾಯಕ ಕಾರ್ಯ[illegible] ಅಭಿಯಂತರರು

TEJUS CONSULTANTS
No 58, 3rd main, 6th Cross 1st Stage KHB Colony Basaveshwaranagar Bangalore [illegible] tejusconsultants@gmail.com

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	984	986
2. Weight of Mixture after extraction, g	931	934
3. Weight of Bitumen	53	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.10	5.80
6. Weight of fines, g	1.10	1.80
7. Weight of Bitumen & fines	54.10	53.80
8. Bitumen content in %	5.50	5.46
9. Average Bitumen content in %	5.48	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	02/07/2018
Type of material & Purpose:	BC	Date of testing:	02/07/2018
		Oven Dry Wt.(gms):	931.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	68	68.0	7.30	92.70	90 - 100
9.50	126	194.0	20.84	79.16	70 - 88
4.75	148	342.0	36.73	63.27	53 - 71
2.360	142	484.0	51.99	48.01	42 - 58
1.180	92	576.0	61.87	38.13	34 - 48
0.600	63	639.0	68.64	31.36	26 - 38
0.300	79	718.0	77.12	22.88	18 - 28
0.150	70	788.0	84.64	15.36	12 - 20
0.075	88	876.0	94.09	5.91	4 - 10
Pan	55.0				
Total	931.0				

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	982	983
2. Weight of Mixture after extraction, g	930	931
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.00	5.20
6. Weight of fines, g	1.00	1.20
7. Weight of Bitumen & fines	53.00	53.20
8. Bitumen content in %	5.40	5.41
9. Average Bitumen content in %	5.40	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	02/07/2018
Type of material & Purpose:	BC	Date of testing:	02/07/2018
		Oven Dry Wt.(gms):	930.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	66	66.0	7.10	92.90	90 - 100
9.50	125	191.0	20.54	79.46	70 - 88
4.75	147	338.0	36.34	63.66	53 - 71
2.360	140	478.0	51.40	48.60	42 - 58
1.180	90	568.0	61.08	38.92	34 - 48
0.600	62	630.0	67.74	32.26	26 - 38
0.300	77	707.0	76.02	23.98	18 - 28
0.150	69	776.0	83.44	16.56	12 - 20
0.075	115	891.0	95.81	4.19	4 - 10
Pan	39.0				
Total	930.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	984	980
2. Weight of Mixture after extraction, g	932	928
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.20	5.00
6. Weight of fines, g	1.20	1.00
7. Weight of Bitumen & fines	53.20	53.00
8. Bitumen content in %	5.41	5.41
9. Average Bitumen content in %	5.41	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	02/07/2018
Type of material & Purpose:	BC	Date of testing:	02/07/2018
		Oven Dry Wt.(gms):	932.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	68	68.0	7.30	92.70	90 - 100
9.50	126	194.0	20.82	79.18	70 - 88
4.75	148	342.0	36.70	63.30	53 - 71
2.360	142	484.0	51.93	48.07	42 - 58
1.180	92	576.0	61.80	38.20	34 - 48
0.600	63	639.0	68.56	31.44	26 - 38
0.300	79	718.0	77.04	22.96	18 - 28
0.150	70	788.0	84.55	15.45	12 - 20
0.075	89	877.0	94.10	5.90	4 - 10
Pan	55.0				
Total	932.0				

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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, +91 80 23287511, tejusconsultants@gmail.com

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.871	0.870	0.872
Final weight of plate after application of tack Coat (c)	Kg	0.894	0.893	0.895
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.879	0.870	0.872
Final weight of plate after application of tack Coat (c)	Kg	0.902	0.893	0.895
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರ
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads, and Drains at Rachenahalli Village, Anjamnadri layout, Mestripalya and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	02/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.876	0.871	0.872
Final weight of plate after application of tack Coat (c)	Kg	0.899	0.894	0.895
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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20/7/18
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BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : 15. Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.

BYATARAYANAPURA DIVISION

TEST REPORT

1st & Part bill

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Sri. M. S. Venkatesh		
Proposed Use	WMM	**Date of Sampling**	10/07/2018
Sample Location	At plant	**Date of Testing**	10/07/2018

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	382.00	374.00	375.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	298.00	275.00	295.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	84.00	99.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	21.99	26.47	21.33	
5	Average Aggregate impact value	(%)	23.26			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Authorised Signatory

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ಸಹಾಯಕ ಕಾರ್ಯ ಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-24

TEJUS
CONSULTANTS

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division..
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	10/07/2018
		Date of Testing	10/07/2018

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	904	82	899	82
16.0	12.5	1028	98	1011	116
12.5	10.0	482	86	411	59
10.0	6.3	534	79	465	37
Total		**2948**	**345**	**2786**	**294**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.70
Elongation Index(%):	10.55
Combined FI+EL (%)	22.26

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ಸಹಾಯಕ ಆಯುಕ್ತರು/ಸಹಾಯಕ ಅಭಿಯಂತರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-24

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	10/07/2018
		Date of Testing	10/07/2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	906	74	870	96
16.0	12.5	1195	116	1129	98
12.5	10.0	555	86	452	70
10.0	6.3	580	88	530	62
Total		3236	364	2981	326

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.25
Elongation Index(%):	10.94
Combined FI+EL (%)	22.18

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	10/07/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	Date of Sampling:	10/07/2018
Type of material & Purpose:	WMM	Date of testing:	10/07/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	358	325	3.25	96.75	95-100
22.4	2395	2727	27.27	72.73	60-80
11.2	1772	4525	45.25	54.75	40-60
4.75	1682	6255	62.55	37.45	25-40
2.36	1163	7321	73.21	26.79	15-30
0.6	1293	8623	86.23	13.77	8.0-22.0
0.075	953	9653	96.53	3.47	0-8
Pan	347				
Total	10000				

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	10/07/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	10/07/2018
Type of material & Purpose:	WMM	**Date of testing:**	10/07/2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	335	335	3.35	96.65	95-100
22.4	2215	2550	25.50	74.50	60-80
11.2	1736	4286	42.86	57.14	40-60
4.75	1896	6182	61.82	38.18	25-40
2.36	1362	7544	75.44	24.56	15-30
0.6	1216	8760	87.60	12.40	8.0-22.0
0.075	920	9680	96.80	3.20	0-8
Pan	320				
Total	10000				

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Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	11/07/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	**1**	**2**	**3**
Wt. of wet material from hole (Ww) gms.	6300	6450	6563
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9760	9680	9640
Wt. of sand in cone (w3) gms.	835	810	820
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3405	3510	3540
Bulk density of sand (γs)gm/cc	1.31	1.32	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.42	2.43	2.43
Moisture meter reading(moisture content)	12.69	12.62	12.64
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.15	2.15	2.16
MDD	2.18	2.18	2.18
OMC	12.70%	12.70%	12.70%
% of Compaction Obtained	98.66	98.80	98.91
Compaction Required	98%	98%	98%

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Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	11/07/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6562	6552	6543
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9612	9614	9590
Wt. of sand in cone (w3) gms.	832	810	836
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3556	3576	3574
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.44	2.42	2.42
Moisture meter reading(moisture content)	12.43	12.45	12.47
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.17	2.15	2.15
MDD	2.19	2.19	2.19
OMC	12.59%	12.59%	12.59%
% of Compaction Obtained	98.93	98.21	98.11
Compaction Required	98%	98%	98%

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Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	11/07/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6638	6648	6651
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9531	9543	9545
Wt. of sand in cone (w3) gms.	835	820	832
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3634	3637	3623
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.41	2.41	2.42
Moisture meter reading(moisture content)	12.33	12.36	12.39
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.15	2.15	2.16
MDD	2.19	2.19	2.19
OMC	12.63%	12.63%	12.63%
% of Compaction Obtained	98.01	98.05	98.45
Compaction Required	98%	98%	98%

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Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri. M. S. Venkatesh

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

Date of Testing	11/07/2018
Layer no. or level	WMM I layer
Depth of hole	250mm

Field density:	1	2	3
Wt. of wet material from hole (Ww) gms.	6582	6581	6574
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9500	9480	9483
Wt. of sand in cone (w3) gms.	834	832	835
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3666	3688	3682
Bulk density of sand (γs)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.36	2.36
Moisture meter reading(moisture content)	12.62	12.68	12.69
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.09	2.09
MDD	2.13	2.13	2.13
OMC	12.69%	12.69%	12.69%
% of Compaction Obtained	98.80	98.14	98.19
Compaction Required	98%	98%	98%

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

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Project	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Sri. M. S. Venkatesh		
Proposed Use	BC	Date of Sampling	18/07/2018
Sample Location	At plant	Date of Testing	18/07/2018

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	365.00	352.00	362.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	286.00	280.00	287.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	79.00	72.00	75.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.64	20.45	20.72	
5	Average Aggregate impact value	(%)	20.94			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client :	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant :	**M/s Tejus Consultants**
Contractor:	**Sri. M. S. Venkatesh**

Type of Material	**BC**	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**18/07/2018**
		Date of Testing	**18/07/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	650	88	670	64
16.0	12.5	1286	110	1145	80
12.5	10.0	633	76	580	110
10.0	6.3	642	68	585	74
Total		**3211**	**342**	**2980**	**328**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.65
Elongation Index(%):	11.01
Combined FI+EL (%)	21.66

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	18/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	18/07/2018
Type of material & Purpose:	BC	Date of testing:	18/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	7.50	92.50	90 - 100
9.50	130	220.0	18.33	81.67	70 - 88
4.75	215	435.0	36.25	63.75	53 - 71
2.360	184	619.0	51.58	48.42	42 - 58
1.180	136	755.0	62.92	37.08	34 - 48
0.600	121	876.0	73.00	27.00	26 - 38
0.300	116	992.0	82.67	17.33	18 - 28
0.150	68	1060.0	88.33	11.67	12 - 20
0.075	37	1097.0	91.42	8.58	4 - 10
Pan	103.0				
Total	1200.0				

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು-24

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor:	Sri. M. S. Venkatesh

Type of Material	BC	Proposed Use	BC
Sample Location	At plant	Date of Sampling	18/07/2018
		Date of Testing	18/07/2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	650	87	670	65
16.0	12.5	1286	112	1145	82
12.5	10.0	633	78	580	119
10.0	6.3	642	69	585	73
Total		3211	346	2980	339

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.78
Elongation Index(%):	11.38
Combined FI+EL (%)	22.15

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ಸಹಾಯಕ ಅಭಿಯಂತರರು
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ಸಹಾಯಕ ಕಾರ್ಯ ಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	19/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	19/07/2018
Type of material & Purpose:	BC	Date of testing:	19/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	88	88.0	7.33	92.67	90 - 100
9.50	117	205.0	17.08	82.92	70 - 88
4.75	213	418.0	34.83	65.17	53 - 71
2.360	174	592.0	49.33	50.67	42 - 58
1.180	148	740.0	61.67	38.33	34 - 48
0.600	126	866.0	72.17	27.83	26 - 38
0.300	102	968.0	80.67	19.33	18 - 28
0.150	84	1052.0	87.67	12.33	12 - 20
0.075	90	1142.0	95.17	4.83	4 - 10
Pan	58.0				
Total	1200.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	19/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.872	0.871	0.876
Final weight of plate after application of tack Coat (c)	Kg	0.895	0.894	0.899
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor:	Sri. M. S. Venkatesh

Type of Material	BC	Proposed Use	BC
Sample Location	At plant	Date of Sampling	19/07/2018
		Date of Testing	19/07/2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	645	85	565	63
16.0	12.5	1285	110	1130	78
12.5	10.0	630	74	570	115
10.0	6.3	632	65	575	72
Total		3192	334	2840	328

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.46
Elongation Index(%):	11.55
Combined FI+EL (%)	22.01

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	19/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	980	990
2. Weight of Mixture after extraction, g	928	938
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.00	5.80
6. Weight of fines, g	1.00	1.80
7. Weight of Bitumen & fines	53.00	53.80
8. Bitumen content in %	5.41	5.43
9. Average Bitumen content in %	5.42	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	19/07/2018
Type of material & Purpose:	BC	Date of testing:	19/07/2018
		Oven Dry Wt.(gms):	928.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	68	68.0	7.33	92.67	90 - 100
9.50	126	194.0	20.91	79.09	70 - 88
4.75	148	342.0	36.85	63.15	53 - 71
2.360	142	484.0	52.16	47.84	42 - 58
1.180	92	576.0	62.07	37.93	34 - 48
0.600	63	639.0	68.86	31.14	26 - 38
0.300	79	718.0	77.37	22.63	18 - 28
0.150	70	788.0	84.91	15.09	12 - 20
0.075	96	884.0	95.26	4.74	4 - 10
Pan	44.0				
Total	928.0				

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TEJUS CONSULTANTS
No 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 2328 7522, tejusconsultants@gmail.com

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

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Project	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**		
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**		
Consultant	**M/s Tejus Consultants**		
Contractor	**Sri. M. S. Venkatesh**		
Proposed Use	BC	**Date of Sampling**	**19/07/2018**
Sample Location	At plant	**Date of Testing**	**19/07/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	368.00	354.00	364.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	286.00	280.00	287.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	74.00	77.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.28	20.90	21.15	
5	Average Aggregate impact value	(%)	21.45			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರ
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು-24

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	20/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.875	0.873	0.872
Final weight of plate after application of tack Coat (c)	Kg	0.898	0.896	0.895
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

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Project	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**		
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**		
Consultant	**M/s Tejus Consultants**		
Contractor	**Sri. M. S. Venkatesh**		
Proposed Use	BC	**Date of Sampling**	**20/07/2018**
Sample Location	At plant	**Date of Testing**	**20/07/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	366.00	357.00	361.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	286.00	280.00	287.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	80.00	77.00	74.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.86	21.57	20.50	
5	Average Aggregate impact value	(%)	21.31			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor:	Sri. M. S. Venkatesh

Type of Material	BC	Proposed Use	BC
Sample Location	At plant	Date of Sampling	20/07/2018
		Date of Testing	20/07/2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	650	87	670	65
16.0	12.5	1286	112	1145	82
12.5	10.0	633	78	580	119
10.0	6.3	642	69	585	73
Total		3211	346	2980	339

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.78
Elongation Index(%):	11.38
Combined FI+EL (%)	22.15

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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TEJUS
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GRADATION FOR BC
(As per MORT&H 500-17,Grading-2)

Name of Work	:	**Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri. M. S. Venkatesh
Date of Testing	:	20/07/2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	20/07/2018
Type of material & Purpose:	BC	Date of testing:	20/07/2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	7.50	92.50	90 - 100
9.50	130	220.0	18.33	81.67	70 - 88
4.75	215	435.0	36.25	63.75	53 - 71
2.360	184	619.0	51.58	48.42	42 - 58
1.180	136	755.0	62.92	37.08	34 - 48
0.600	121	876.0	73.00	27.00	26 - 38
0.300	100	976.0	81.33	18.67	18 - 28
0.150	68	1044.0	87.00	13.00	12 - 20
0.075	37	1081.0	90.08	9.92	4 - 10
Pan	119.0				
Total	1200.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	20/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	985	984
2. Weight of Mixture after extraction, g	933	932
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.20	5.10
6. Weight of fines, g	1.20	1.10
7. Weight of Bitumen & fines	53.20	53.10
8. Bitumen content in %	5.40	5.40
9. Average Bitumen content in %	5.40	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	20/07/2018
Type of material & Purpose:	BC	Date of testing:	20/07/2018
		Oven Dry Wt.(gms):	933.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	68	68.0	7.29	92.71	90 - 100
9.50	126	194.0	20.79	79.21	70 - 88
4.75	148	342.0	36.66	63.34	53 - 71
2.360	142	484.0	51.88	48.12	42 - 58
1.180	92	576.0	61.74	38.26	34 - 48
0.600	63	639.0	68.49	31.51	26 - 38
0.300	79	718.0	76.96	23.04	18 - 28
0.150	70	788.0	84.46	15.54	12 - 20
0.075	92	880.0	94.32	5.68	4 - 10
Pan	53.0				
Total	933.0				

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

Authorised Signatory

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಕಚೇರಿ, ಬೆಂಗಳೂರು-24

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX	
Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	21/07/2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	976	982
2. Weight of Mixture after extraction, g	925	930
3. Weight of Bitumen	51	52
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.70	5.00
6. Weight of fines, g	1.70	1.00
7. Weight of Bitumen & fines	52.70	53.00
8. Bitumen content in %	5.40	5.40
9. Average Bitumen content in %	5.40	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	At site	Date of Sampling:	21/07/2018
Type of material & Purpose:	BC	Date of testing:	21/07/2018
		Oven Dry Wt.(gms):	925.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	66	66.0	7.14	92.86	90 - 100
9.50	125	191.0	20.65	79.35	70 - 88
4.75	147	338.0	36.54	63.46	53 - 71
2.360	140	478.0	51.68	48.32	42 - 58
1.180	90	568.0	61.41	38.59	34 - 48
0.600	62	630.0	68.11	31.89	26 - 38
0.300	77	707.0	76.43	23.57	18 - 28
0.150	69	776.0	83.89	16.11	12 - 20
0.075	98	874.0	94.49	5.51	4 - 10
Pan	51.0				
Total	925.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Project:Improvements to Balance Roads, and Drains at BDS Layout, Shirdi Sai Rathanagara, Kaverinagara and Sorrounding Area in ward No 06 Thanisandra, Byatarayanapura Sub Division.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Sri. M. S. Venkatesh
Date of Testing :	21/07/2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.875	0.879	0.876
Final weight of plate after application of tack Coat (c)	Kg	0.898	0.902	0.899
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256	0.256
Average	Kg/sq.m	0.256		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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